MONTANA CLINICAL COMMUNICATION AND SURVEILLANCE REPORT

ISSUE: JANUARY - MARCH 2008

TRENDS IN DIABETES CARE PRACTICES IN THE U.S. AND MONTANA: ARE THE EXPENDITURES PAYING FOR PREVENTIVE CARE?

WHAT'S INSIDE

MONTANA
CARDIOVASCULAR HEALTH AND DIABETES PROGRAMS

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BACKGROUND

Diabetes is a chronic, costly and complex challenge requiring continuing medical care and patient self-management. For 2007, the American Diabetes Association estimated that individuals with diabetes had medical expenditures 2.3 times higher than the expenditures would have been without diabetes.[1] In total, diabetes costs in the United States (U.S.) were estimated to be $174 billion in 2007. Much of the cost is for ongoing medical care, both in and out of hospitals, and outpatient medications and supplies. Standards of care for diabetes include assessment and recommendations for glycemic control and self-management education as well as prevention, assessment and management of a myriad of complications.[2] Preventing progression of diabetes complications and disability can reduce costly problems associated with the disease. Despite enormous expenditures on diabetes, many studies have shown that patients do not receive all of the preventive care that has been recommended.[3]

This report updates data from the Behavioral Risk Factor Surveillance System (BRFSS), a state-based, random digit-dialed telephone survey of

non-institutionalized individuals in the U.S. age 18 years and over. The BRFSS includes a module on diabetes that asks persons with a history of diagnosed diabetes about selected examinations, immunizations and self-care practices. The report also presents progress towards 2010 national health objectives for diabetes.[4]

METHODS

The BRFSS survey is conducted each year in all 50 states, the District of Columbia and the three U.S. territories of Guam, Puerto Rico and the Virgin Islands. Respondents were defined to have diabetes if they answered "yes" to the question "Has a doctor ever told you that you have diabetes?" Women who were told they had diabetes only during pregnancy were not considered to have diabetes. Respondents who reported they had diabetes were asked several additional questions from the diabetes optional module about preventive care practices. These questions included: "When was the last time you had an eye exam in which the pupils were dilated?" (dilated retinal examination); "About how many times in the last year has a health professional checked your feet for any sores or irritations?" (foot examination); "About how often do you check your blood for glucose or sugar?" (SMBG - self-monitoring of blood glucose at least once daily); and "A test for hemoglobin A one c (A1c) measures the average level of blood sugar over the past three months. About how many times in the past 12 months has a doctor, nurse or other health professional checked you for hemoglobin A one c?" (A1c testing at least twice a year). Respondents were asked two additional questions from the core BRFSS module: "During the past 12 months, have you had a flu shot?" (influenza vaccination) and "Have you ever had a pneumococcal vaccination?" (pneumococcal vaccination).

In 1995 and 2005, a total of 39 and 40 states, respectively, included the diabetes optional module in their annual BRFSS survey. Data was accessed on March 25, 2008 from the Centers for Disease Control and Prevention (CDC) website at: www.cdc.gov/diabetes.[5] Data was weighted to reflect the age, sex and racial/ethnic distribution in each state. The 2000 U.S. Standard Population was used to age adjust estimates. For Montana, three-year averages were used to improve the precision of the annual preventive care practice estimates. Prevalence estimates for the U.S. are based on a single year. For the U.S., 1995 and 2005 age-adjusted rates for selected preventive care services and vaccinations are presented. For Montana, age-adjusted rates for dilated retinal examination, foot examination and SMBG are presented for each year from 1995 to 2005. Influenza and pneumococcal vaccination age-adjusted rates are presented for 1995, 1997, 1999 and 2001 to 2005. The age-adjusted rates for A1c testing are presented from 2000 to 2005. All analyses

were conducted using SAS V8 and SUDAAN to estimate standard errors and test for significant difference in rates between 1995 and 2005.

RESULTS

In the U.S., there was a slight increase in the percentage of adults with diabetes who reported receiving an annual dilated retinal eye examination from 1995 to 2005 (58% to 61%). During the same period, age-adjusted rates in Montana remained slightly higher than the U.S. and the trend in the eye exam rates for Montana showed an increase from 65% in 1995 to a high of 70% in 1999, followed by a decline to 64% in 2005 (Figure1). In 2005, about 65% of persons with diabetes reported A1c testing (at least twice a year) in the U.S.; this rate was essentially unchanged from 2000. In Montana, this same rate increased from 61% in 2000 to 66% in 2005, slightly exceeding the U.S. rate (Figure 2). In contrast, rates of SMBG increased markedly from 1995 to 2005 in both the U.S. and Montana (Figure 3). And in 2005, both Montana and the U.S. reached and exceeded the Healthy People 2010 SMBG goal of 60%. Annual influenza vaccine rates among adults with diabetes in the U.S. were much lower than the rates in Montana in 2005. However, Montana rates appeared to stabilize in 2001-2003, then diminish in the most recent years (Figure 4). Pneumococcal immunization rates doubled in the U.S. between 1995 and 2005 (Figure 5). In 1995, pneumococcal rates in Montana were higher than the U.S., and increased from 36% to over 56% by 2005. Finally, over half of adults with diabetes reported an annual foot examination in both the U.S. and Montana in 1995 (Figure 6). In Montana, annual foot examinations increased markedly to a high of 79% in 2001, exceeding the Healthy People 2010 goal of 75%. However, in Montana these rates have decreased slightly in the most recent years.

Figure 1. Age-adjusted rate for annual dilated retinal examination among adults with diabetes in the U.S. and Montana, 1995 to 2005.

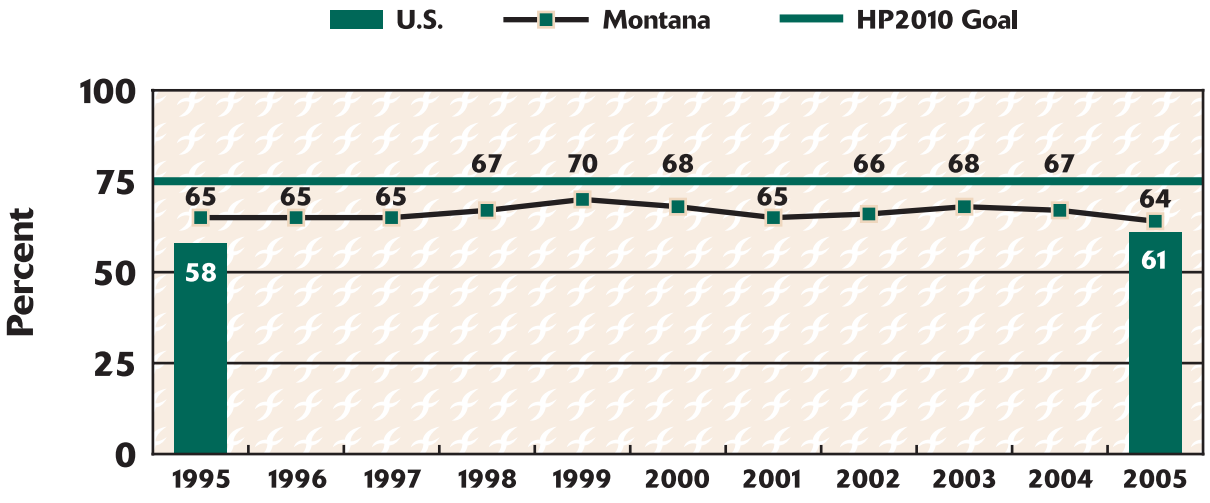


Figure 2. Age-adjusted rate for A1c testing (at least two in the last year) among adults with diabetes in the U.S. and Montana, 2000 to 2005.

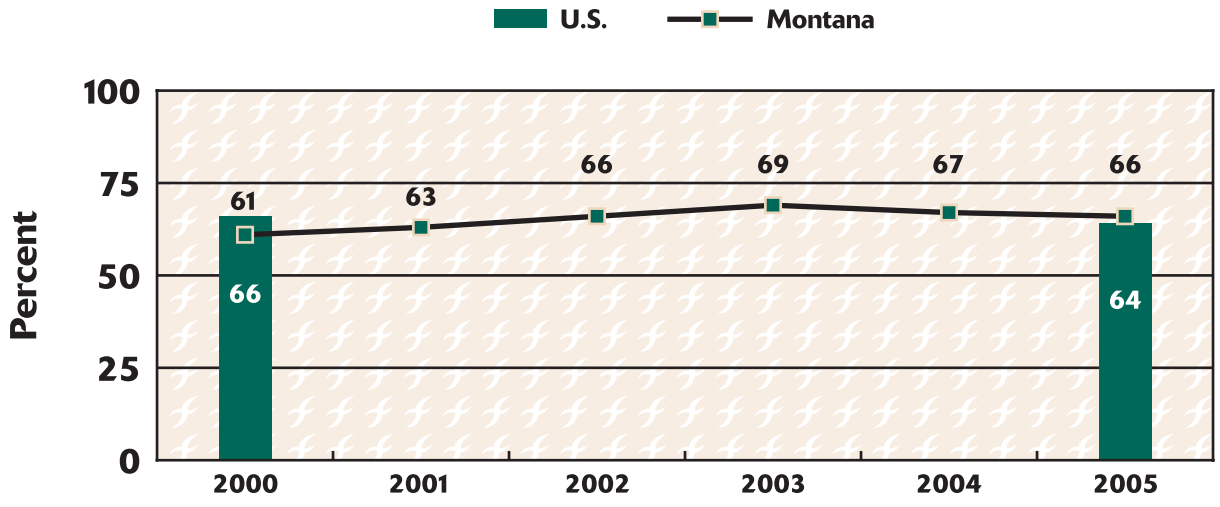


Figure 3. Age-adjusted rate for self-monitoring of blood glucose (at least once daily) among adults with diabetes in the U.S. and Montana, 1995 to 2005.

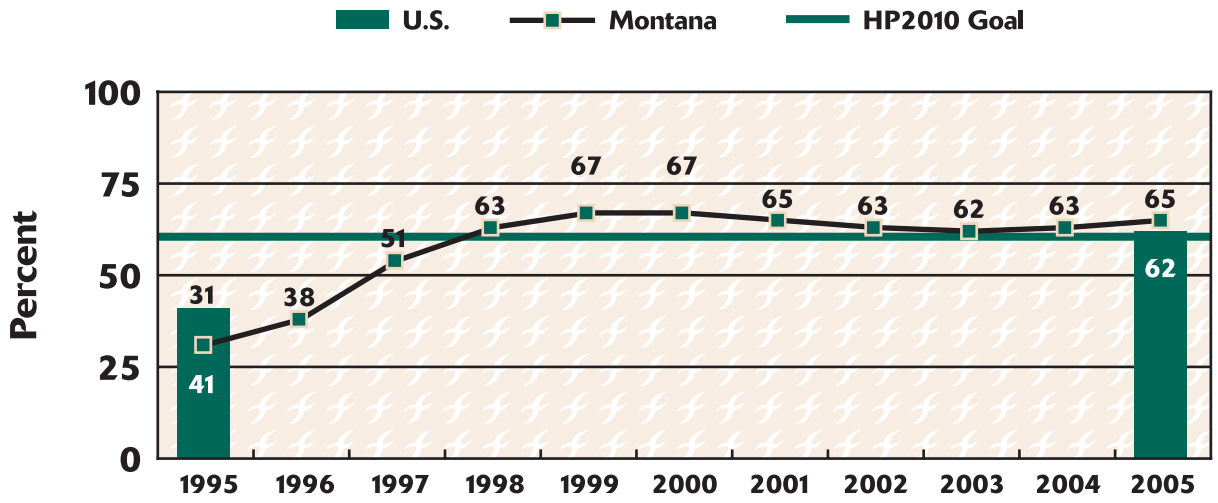


Figure 4. Age-adjusted rate of annual influenza immunization among adults with diabetes in the U.S. and Montana, 1995 to 2005.

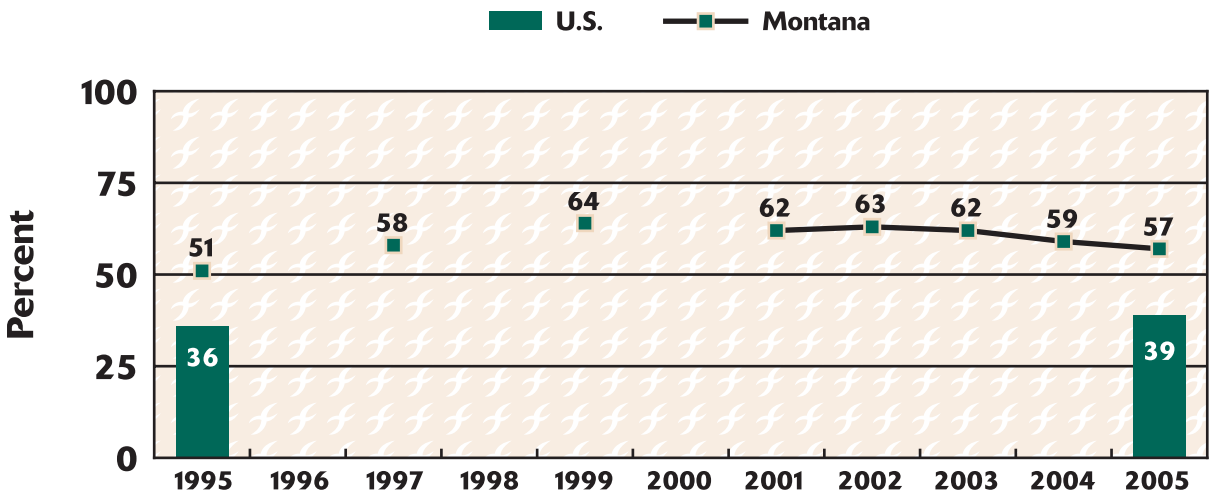


Figure 5. Age-adjusted rate of pneumococcal immunization among adults with diabetes in the U.S. and Montana, 1995 to 2005.

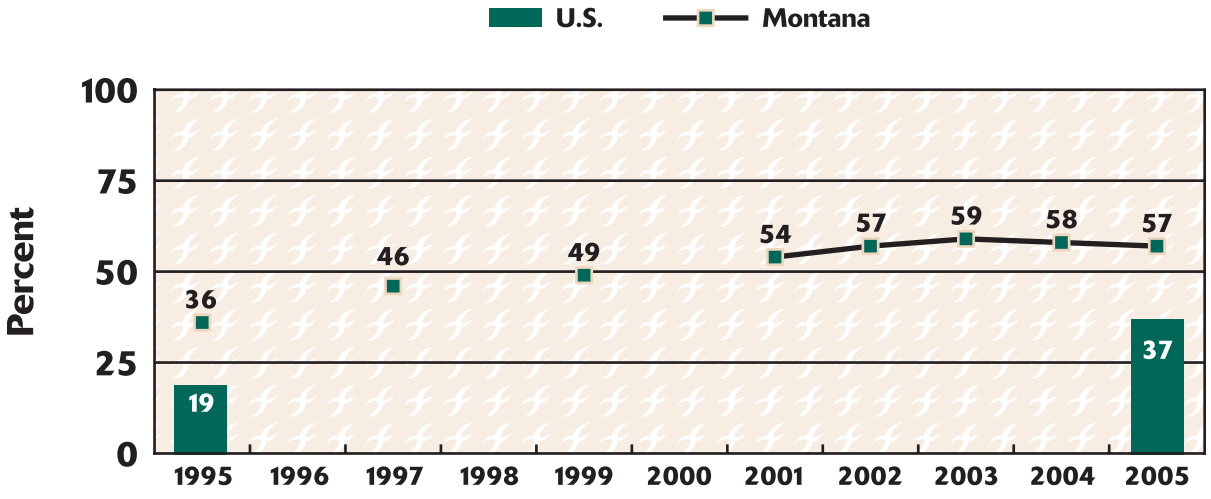
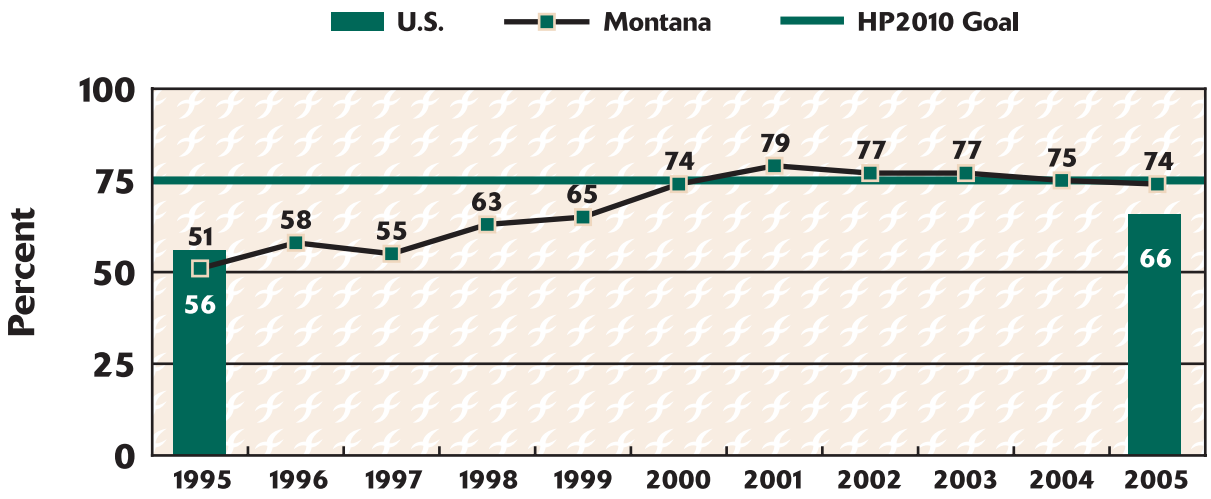


Figure 6. Age-adjusted rate of annual foot examinations among adults with diabetes in the U.S. and Montana, 1995 to 2005.



DISCUSSION

In summary, there was an increase in the U.S. age-adjusted rates of all preventive care practices except A1c testing (at least semi-annually) in 2005 compared to 1995. Similarly, Montana rates of preventive care increased in 2005 compared to 1995. However, data from intervening years shows that Montana's reported rates have actually diminished in recent years for several important tests and self-care practices. Dilated eye exam rates remain a challenge, with little progress in improving rates documented in the U.S. or Montana.

Data from the BRFSS have several limitations. First, the information on testing and examinations are self-reported, thus subject to recall bias. Second, the BRFSS survey is a telephone survey and therefore does not reflect the experience of residents without telephones. Third, the BRFSS survey is conducted among non-institutionalized adults 18 years and older, results cannot be generalized to persons residing in institutions (e.g., nursing homes or prisons) or persons under the age of 18. Finally, these analyses include only 39 states in 1995 and 40 states in 2005, and may not be fully representative of the entire U.S. population.

Although estimates from BRFSS may actually overestimate the rates of preventive care, the findings in this report are important. Diabetes is an enormously costly disease; improving preventive and potentially cost-saving care, and sustaining those improvements, remains challenging.

REFERENCES

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SAVE THE DATE!

DIABETES PROFESSIONAL CONFERENCE
BOZEMAN, MONTANA
OCTOBER 23-24, 2008

The Montana Diabetes Project's professional conference will be held on Thursday and Friday, October 23-24, 2008 in Bozeman, Montana at the Holiday Inn. This year's conference will feature keynote speaker Irl Hirsch MD, Professor of Medicine at the University of Washington Medical Center.

WHAT ARE THE MONTANA DIABETES PREVENTION AND CARDIOVASCULAR HEALTH PROGRAMS AND HOW CAN WE BE CONTACTED?

The Montana Diabetes Control and Cardiovascular Health Programs are funded through cooperative agreements with the Centers for Disease Control and Prevention, Division of Diabetes Translation (U32/CCU822743-05), the Division for Heart Disease and Stroke Prevention (1U50 DP000736-01) and through the Montana Department of Public Health and Human Services.

The mission of the Diabetes Control and Cardiovascular Health Programs is to reduce the burden of diabetes and cardiovascular disease among Montanans. Our web pages can be accessed at http://www.diabetes.mt.gov and http://montanacardiovascular.state.mt.us.

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